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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/396,266	09/15/1999	THOMAS H. PETERSON	1998U007A.US	7188

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EXAMINER

LU, C CAIXIA

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 05/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/396,266

Applicant(s)

PETERSON, THOMAS H.

Examiner

Caixia Lu

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 7-11, 14-20, 22, 24-28, 31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-11, 14-20, 22, 24-28, 31 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 17.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Applicant has withdrawn the Appeal filed on October 12, 2001 and reopens the prosecution. Currently, Claims 1-3, 5, 7-11, 14-20, 22, 24-28, and 31-32 are pending.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-3, 5, 7-11, 14-20, 22, 24-28, and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al. (US 5,955,557) and Nakanaga et al. (H8-231622, the Translated copy is referred to hereinafter) independently.

The instant claims are directed to an olefin polymerization process in the presence of a catalyst system comprising a metallocene compound represented by formula $C_pD^a(JY)(Q)_{(a-2)}$ and an aluminoxane activator.

Machida teaches an olefin polymerization process in the presence of a catalyst system comprising a metallocene compound and aluminoxane (col. 9, line 50; col. 11, lines 11; and col. 12, lines 5-25). Machida teaches all of the limitations of the instant claims.

Nakanaga teaches an olefin polymerization process in the presence of a catalyst system comprising a metallocene compound and aluminoxane (pages 2 and 4). ~~Machida~~
Nakanaga
teaches all of the limitations of the instant claims.

Therefore, it would have been obvious to a skilled artisan at the time the invention was made to employ Machida or Nakanaga's process to provide an olefin polymer in the presence of the catalyst composition which reads on those of the instant

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claims because such is within the generic disclosure of the references and all of the embodiments of the references are expected to work and in the absence of any showing of criticality and unexpected results.

4. Claims 1-3, 5, 7-11, 14-20, 22, 24-28, and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell, Jr. (US 5,206,197) in view of Nomura et al. (Organometallics 1998, 17, 2152-2154) and Pellecchia et al. (Makromol. Chem., Rapid Commun., 12:663, 1991).

Campbell teaches monocyclopentadienyl containing transition metal complexes which are the same and substantially similar to that of the instant claims (col. 1, line 48 to col. 2, line 15; col. 3, lines 35-53). However, Campbell, Jr.'s catalyst system is used for the polymerization of vinyl aromatic monomers with high syndiotacticities.

Campbell does not use aluminoxane as the cocatalyst in the catalyst composition, however, Campbell is aware that aluminoxane is conventionally used as a cocatalyst (col. 9, lines 2). As indicated in the second paragraph of page 2 of the instant application, Pellecchia teaches that aluminoxane is a better activator compared to boron containing activators. Therefore, it would be obvious to use aluminoxane in Campbell's process to increase the activity of the catalyst composition when the removal of the aluminoxane from the polymer product is not considered as a problem.

Although Campbell does not teach polymerization of α -olefins with their catalyst system, a skilled artisan would have expected that Campbell, Jr.'s catalyst system can be used for α -olefin polymerization since α -olefins and vinyl aromatic monomers contains the same vinyl functional group and the vinyl group in α -olefins is easier to be

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polymerized compared to that of vinyl aromatic monomers in the presence of a transition metal complex catalyst.

Furthermore, monocyclopentadienyl containing transition metal complex are known for olefin polymerizations. For example, Nomura expressly teaches titanium monocyclopentadienyl-aryloxy complex/aluminoxane catalyst composition for olefin polymerizations in Table 3; and Pellecchia teach CpZrBz_3 /aluminoxane for ethylene polymerization. Campbell's metallocene complexes are identical or substantially similar to those of Nomura and Pellecchia, one would have expected that Campbell's catalysts could be used to polymerize olefin as well.

Thus, it would have been obvious to a skilled artisan at the time the invention to employ the catalyst system of Campbell, Jr. to polymerize α -olefins in search of a more reactive catalyst and in the absence of showing of criticalities and unexpected results.

Response to Arguments

5. Applicant's arguments filed on April 8, 2003 have been fully considered and the only remained issue is discussed as shown below.

Applicant has limited the activator of the instant claims to aluminoxane and asserts that Example 13 of the instant application demonstrates unexpected results. However, applicant has not indicated what are the unexpected results and the examiner is not able to identify the unexpected results. Further clarification is requested. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (703) 306-3434. The examiner can normally be reached on 9:00 a.m. to 3:30 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1193.



Caixia Lu, Ph.D.
Primary Examiner
Art Unit 1713

CL
May 14, 2003